Waterway and Wetland Handbook
CHAPTER 70
STRUCTURES

GUIDANCE PURPOSE AND DISCLAIMER

This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule apply. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance cannot be relied upon and does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decision made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes, common law and administrative rules to the relevant facts.

This file is an electronic version of a chapter of the Waterway and Wetland Handbook. This document was scanned from the master handbook chapter kept at the Bureau of Fisheries and Habitat Protection central office in Madison. All effort was made to ensure this scanned electronic copy is an actual copy of the hardcopy document. Due to the electronic scanning process, there may be rare instances of typographical errors, omissions or improperly formatted pages. Please refer to the master handbook if accurate transcription is required.

A. PURPOSE

The construction or maintenance of structures in navigable waterways can seriously affect the environment and public rights or interests. Throughout the State's history, the degree of regulation and control over structures in navigable waterways has gradually increased in order to preserve and protect the waterways.

B. MECHANISM

Section 30.12, Wis. Stats., requires a person to obtain a permit prior to placing structures in navigable waters. Also see Chapter 80, Bridges and Chapter 85, Culvert Waterway Crossings, for a discussion of highway structures and private waterway crossings (these chapters will be combined to address s. 30.123, entitled "Bridge Construction and Maintenance").

C. HISTORY

Various cities and villages were authorized by statute to regulate waterway modifications and control structures long before the state adopted regulatory controls. One example is Chapter 134, Private and Local Laws of 1856, that granted the City of La Crosse, in its incorporation charter, the power "to regulate the construction of piers, docks, wharves and levees extending into the Mississippi River." Another example, Chapter 179, Private and Local Laws of 1856, authorized the City of Milwaukee to establish dock lines. These powers were also often granted separately by the legislature to municipalities and were not enumerated in their general and specific powers identified in the statutes.

Some Supreme Court cases help to provide us with an understanding of the attitudes concerning these

activities at an early time in the state's history. The case of Walker vs. Shepardson, 4 Wis 486 (1855), dealt with the construction of wharves and "dock lines" in the Milwaukee River in the City of Milwaukee. The site involved in the decision was at the confluence of the Menomonee River and Milwaukee River where "...the river, at the point in question, and for a considerable space thereabout, spread out over a large surface, making a sort of marsh covered with water to a depth of from one to three feet..." Many underwater lots were plotted out involving several city blocks. The lots were all within the meandered lines of the rivers as determined by the government survey. The complainant, Walker, had built a "dock" of piling and timbers, dredged the river and filled in his lots and the space between his lots and the meander line of the Milwaukee River. The City of Milwaukee had established a dock or wharf line by ordinance on May 5, 1853, that coincided with the meander line. He complained that Shepardson was "wrongfully and unlawfully blocking up and obstructing the channel of said Milwaukee River, in front of complainant's lots, by driving timber or piles into the bed of said river, and by filling up and stopping said river by logs, timbers, spars, gravel, etc.,... extending into the channel thereof more than 50 feet beyond the said dock line..." Shepardson actually was constructing his "dock" along his lot lines and the dock line had been established across one of his lots. He denied that he would "block up and obstruct the navigable channel" of the river, that the complainant's dock "is at least 100 feet west of where it should be for the purposes of navigation and commerce;" and "there is not, even now, four feet of water between said proposed dock and the navigable channel of the river until you get out over 100 feet further east, and towards the center of the river."

The court made the following comments; "Both the complainant and the defendant as such owners, have the right to use their land that is covered by the water of the river, in any way compatible with the use of the stream for the purposes of navigation; but this they cannot interrupt. They may therefore construct docks or landing places for goods or passengers, taking care that vessels employed in navigating the stream are not impeded in their passage, nor prevented from the use of all parts of the stream that are navigable." "We think it certain that the rights of the complainant, as a riparian owner, will not be impaired by the improvements that the defendant has commenced." "The complainant, it appears, instead of constructing his dock along the margin of the river on the line where the water becomes sufficient depth to permit vessels to navigate it, has built his dock where excavation of the earth was necessary in order to permit vessels to approach it." "The testimony... is very conflicting, and by no means sufficient to warrant the interference of a court of chancery to prevent the defendant from proceeding with the construction of his dock."

In Diedrich vs. the N.W.V. Ry. Co., 42 Wis. 248 (1877), the court held that "a riparian owner upon navigable water,...unless prohibited by local law, has a right to construct in shoal water, in front of his land, proper wharves or piers, in aid of navigation, and at his peril of obstructing navigation, through the water far enough to reach actually navigable water; this being held to further the public use of the water, to that the public title under the water is subordinate; and therefore to be, in the absence of prohibition, passively licensed by the public and not a purpresture."

In Larson and Others vs. Furlong and Others, 50 Wis. 681 (1881), Larson had constructed a rock filled timber crib dock 140 feet long, 16 feet wide disconnected from and 20 feet from the low water mark of Lake Michigan. He was not a riparian owner, but intended to connect his dock with a public highway that was supposed to have been lawfully laid out by proper authorities. Furlong claimed it was a private and public nuisance since it was not authorized by law and removed the dock himself. In commenting on the case the court said. "If the dock had been used in the way it was intended to be, it would not have been a public nuisance. Such use would have been in aid of commerce and navigation, and lawful...unless so constructed as to unnecessarily obstruct the navigation of the harbor." This conclusion would not have been reached under current statutes.

Although municipalities had generally been granted substantial powers to control the construction of structures and "dock lines" in navigable waters, the legislature continued to authorize piers, docks, other structures and "dock lines" through adoption of session laws.

While the legislature and municipalities had the authority to authorize these activities, the state regulations that were being developed were primarily enforcement provisions.

The Department and its predecessor agencies have held that it was not prohibited to build structures such as boathouses in navigable waters prior to enactment of s. 30.02(1)(b), by Chapter 455, Laws of 1933, that reads: "It shall be unlawful to deposit any material or to place any structures upon the bed of any navigable water where no shore line has been established or beyond such shore line where the same has been established."

Historically, some buildings constructed on the bed of streams were held by our Supreme Court to be a legal use of an individual's property since the Court considered some of these streams to be non-navigable. The Court held these streams did "not materially obstruct existing navigation." [See State v. Carpenter, 68 Wis. 165 (1887); Janesville v. Carpenter, 77 Wis. 288 (1890); State v. Sutherland, 166 Wis. 511 (1918) and S.S. Kresge Company v. Railroad Comm. 204 Wis. 479 (1931) for an understanding and explanation of this era of our history.] The Court in Kresge noted, however, that if the river (the Rock) is in the future considered navigable in fact, the State could then seek removal. The general presumption, therefore, is that structures built before the specific prohibition of 1933 were subject to the State's "trust" protection and could be pursued as violations unless they were in aid of navigation.

Other sections of the statutes could have been used to control or prohibit the placement of structures prior to 1933. In 1841, the Territorial Legislature adopted Act No. 9 that declared meandered rivers and streams "navigable to such an extent that no dam, bridge, or other obstruction may be made in or over the same without the permission of the legislature." The Revised Statutes of 1878 established penalties for obstructing navigable streams. Chapter 652, Laws of 1911, established penalties for obstructions "in or over a navigable waters of this state in violation of the provisions of this section." Although this amendment expanded the penalty section to include lakes for the first time, there was no statutory prohibition against placing obstructions in lakes - only streams. Chapter 474, Laws of 1917, corrected this inconsistency in the law through revision, consolidation and renumbering of the statutes. Section 31.23, was created to read: "Every person or corporation that shall obstruct any navigable waters and thereby impair the free navigation thereof...shall forfeit for each such offense...a sum not exceeding fifty dollars." Section 31.25, was also created by the 1917 Law. It declared obstructions constructed or maintained in violation of the provisions of the chapter to be nuisances subject to abatement.

While these statutes were cited on a limited basis to prohibit or control the construction or maintenance of some fills and structures, the legislature apparently felt a more definitive prohibition was in order, thus the enactment of s. 30.02(1)(b), (the forerunner of s. 30.12) in 1933. The total prohibition of structures in navigable waters resulting from adoption of that section created a dichotomy in the law. The common law rights of riparian owners to place certain structures such as piers in navigable waters were clearly established by the courts, yet this new law seemed to prohibit any structure even if it was in aid of navigation.

To handle this apparent conflict the Railroad and Public Service Commissions interpreted the statutes referring to structures and obstructions in navigable waters as referring to unlawful structures that actually interfered with navigation and the rights incident to navigation or was contrary to the trust doctrine.

First Provisions for Issuing Permits

When s. 30.02 was amended by Chapter 335, Laws of 1949, providing for the Public Service Commission to authorize structures, the commission adopted the same policy. Although it may seem that the commission was shirking its responsibility, the Supreme Court in Bond v. Wojahn, 269 Wis. 235 (1954), said:

> The construction given the statute by the commission is practical and it has been in force for many years, particularly under the provisions of Chapter 31, Stats. We concur in its interpretation of the statute. (Emphasis added.)

It must be kept in mind that literally thousands of piers and docks had been or were being constructed in navigable waters. In addition, many boathouses had been built before 1933. Either the boathouses were considered to be aids to navigation, even though many of them included living quarters, or enforcement was not pursued since there was no clear statutory prohibition of structures in lakes prior to 1933. After adoption of the structure prohibition, many enforcement actions were taken in response to complaints about boathouses. The 1949 amendment of s. 30.02 continued the general prohibition of placing structures or deposits in navigable waters, but creation of s. 30.02(1)(b) established a mechanism for approving them by adding the following:

> ...provided, however, that the public service commission may grant to any riparian owner the right to build a structure, or to maintain a structure already built and now existing, for his own use, if the same does not materially obstruct navigation.

After the 1949 amendment, permits were issued for structures, including boathouses and buildings (but excluding wharfs and piers) only insofar as the statutory standard, "if the same does not materially obstruction navigation," was met.

Chapter 712, Laws of 1951, modified s. 30.02(1)(b), by adding these additional standards: "or reduce the effective flood flow capacity of the stream or is not detrimental to the public interest." A revisors note to that legislation indicates that the language was recommended by the Public Service Commission (PSC) because the original statute allowed findings solely on the effect of the proposed obstruction on navigation, whereas flood capacity and other public interests could be as important as navigation.

Chapter 523, Laws of 1957, created s. 30.02(1)(ba), to provide a simple mechanism for the approval of sand blankets. The Conservation director was to have the proposal inspected and filed a report with the PSC. If the PSC did not deny the proposal within 10 days after receiving the report, approval was deemed granted.

Chapter 441, Laws of 1959, repealed Chapter 30, and certain sections of Chapter 31, and renumbered and amended them to create Chapters 30 and 31 in the form we have today. Section 30.02(1)(b) was renumbered as s. 30.12(2)(a), and s. 30.02(1)(ba) was renumbered as s.30.12(2)(b). This chapter, through creation of s. 30.13, also recognized by statute, for the first time, the common law rights of riparian landowners to build wharves and piers.

Chapter 366, Laws of 1961, created s. 30.12(3), the forerunner to the current penalty section, s. 30.12(5).

Chapter 614, Laws of 1965, created the Department of Resource Development as a forerunner to the Department of Natural Resources, which was to be created at a later date. Any reference in Chapters 30 and 31 to the PSC was changed to refer to the Department of Resource Development.

Chapter 276, Laws of 1969, abolished the Department of Resource Development and created the Department of Natural Resources. References in the statutes to the Department of Resource Development were changed to refer to the Department. Language in the sand blanket provision referring to the conservation director was dropped as was the time limitation for denial of a permit.

Chapter 250, Laws of 1975, created subsections 30.12(2)(c) and (d) of the statutes relating to the issuance of permits for the installation of fish cribs and riprap.

Chapter 421, Laws of 1975, removed language that was considered discriminatory on the basis of sex. In s. 30.12, "the owner's property" was substituted for "his property," etc.

Chapter 130, Laws of 1977, modified s. 30.12(1), and created s. 30.12(4) to clarify that the Department of Transportation (DOT) activities in relation to highway construction were exempt from various statutory permit and approval requirements. It also required DOT projects to be accomplished in accordance with interdepartmental liaison procedures established between DOT and DNR. The liaison process is handled by the Bureau of Environmental Analysis and Review.

Chapter 190, Laws of 1977, created s. 30.123, which exempted municipalities from structure permits for highway construction if it was performed in conformance with standards developed by DOT. These standards were adopted as TRANS 207, Wis. Adm. Code, and became effective on July 1, 1981.

Chapter 101, Laws of 1979, created s. 30.121, which established procedures for the regulation of boathouses and houseboats. Prior to adoption of this law the Department had adopted a policy of not authorizing boathouses that were constructed lakeward of the ordinary high-water mark (OHWM). NR 115.03(2)(b)(3), Wis. Adm. Code, adopted in September, 1970 stated:

> Boathouses or similar structures that require a waterfront location shall not be used for habitation nor extend toward the water beyond the ordinary high-water line.

Even with this policy, problems developed because landowners wished to build boathouses over boat slips. Some permits were issued for such construction on the basis that the rule pertained to the original OHWM.

Chapter 226, Laws of 1981, amended s. 30.12, to place "minor" permit provisions in paragraph 3, added a provision for a "minor" structure permit for fords and renumbered the penalty section to paragraph 5.

Chapter 330, Laws of 1981, added DOT exemptions from city and village shoreland wetland zoning to s. 30.12(4)(a).

1987 Act 374 art. 18-23, changed notice provision to s. 30.02(3)&(4), eliminated the requirement to field investigate "minor" permits, added spawning reefs and wing deflectors to the fish crib subsection and allowed their placement in navigable waters instead of just lakes, added a "minor" permit provision for boat landings, added a "minor" provision for permanent boat shelters provided there is no "upland" boathouse within 75' of the OHWM or a boathouse over navigable water on the owners property, added a provision to allow rules to govern the number and aesthetic and architectural features of boat shelters and finally added s. 30.123 to the list of statutory exemptions for DOT.

1989 Act 31 art 685s created subsec. 30.12(4)(f) which states: "This subsection does not apply to activities in the Lower Wisconsin state riverway, as defined in s. 30.40(15)." A new s. 30.455 was created by this act to guide consultation and cooperation between DNR and DOT on DOT activities in the "riverway" in lieu of the provisions in s. 30.12(4).

D. STANDARDS

1. STATUTORY STANDARDS.

a. Major Permits: Section 30.12(2) is the subsection used for authorizing "major" structures such as pile clusters, wingdams, breakwaters, etc., that are more likely to impact on the environment or water use. The standards of s. 30.12(2) are:

1) "The Department may...grant to any riparian owner a permit to build or maintain for the owner's use a structure otherwise prohibited sub. (1)..."

Although this language may seem to be introductory, it does provide us with two elements of legislative direction. First, the permit applicant must be a riparian landowner. Persons with an easement, lease or who are purchasing property by land contract do not qualify as riparian owners. They would have to have the actual owner apply for a permit or be authorized to serve as an agent in writing by the owner.

On a flowage, the riparian owner may be different from the owner of the flowage bed (who has no riparian rights under the law). The Department may issue a permit to a riparian even though the flowage bed owner objects, because we are bound only by the statutory standards. However, where the Department is aware that the flowage bed owner objects, the permit should require that necessary property rights be obtained before such a structure is placed. The flowage bed owner may prohibit structure placement or receive compensation for such placement. Disputes between a riparian and the flowage bed owner may have to be resolved in civil proceedings.

If an applicant must be riparian, near-shore structures must be constructed within the zone of riparian influence or control without intruding on the riparian rights of adjacent landowners.

Second, a structure may be placed in navigable water purely for private use as opposed to a public purpose. However, the private use must be consistent with the public trust doctrine. It should be kept in mind that a permit grants a revocable license to intrude on public waters. A permit does not grant a perpetual right.

Staff gages are sometimes placed by private parties in navigable waters to monitor water levels or flows. We should encourage their use and consider authorizing their placement by letter to further the purpose of s. 31.02(1). Three conditions should be placed in any authorization: whenever possible, gages should be placed on legal fixed structures, gages should be placed to avoid conflict with s. 30.12 standards, and information gathered should be provided to the Department regularly for our records.

2) A permit may be granted "if the structure does not materially obstruct navigation..."

Clearly the characteristics of the waterway involved will have a great bearing on whether a structure could be considered to "materially obstruct navigation." A large waterway such as Lake Michigan develops tremendous wave energy. It is not uncommon for massive jetties or breakwaters to be authorized that extend a considerable distance into the waterway. Due to the sheer size of the waterway, most navigation activities take place relatively far from shore and these massive structures really have little effect on navigation. On inland lakes, navigational uses tend to occur near the shore, particularly for fishing. Any significant intrusion of a structure into the waterway could disrupt established navigational patterns.

3) A permit may be granted "...if the structure does not...reduce the effective flood flow capacity of a stream."

In some instances the opinion of the experienced investigator, after evaluation of the facts and/or investigation of the project site, may clearly support this finding. In other instances hydraulic calculations may be useful or necessary to evaluate this standard.

Compliance with NR 116 does not by itself demonstrate compliance with this standard since the structure may be overtopped with no measurable diminution of flow downstream during high stream flows. At lower flood flow frequencies, structures often cause significant "backwater" or water storage accompanied by reduced downstream flow. It is reasonable to conclude that a structure reduces the effective flood flow capacity if it causes additional adverse flooding (compared to natural conditions) of upstream property that is not owned by the applicant. If one who may be adversely affected consents to diminished flood flow capacity and no adverse impacts to the resource occur, we can consider the standard met.

It is also necessary to consider what might happen downstream or within the reach of the proposed structure. Will the project cause increased flood elevations that do not directly impact an upstream landowner? Will stream velocities increase and cause channel scour and downstream sedimentation?

It usually is necessary to evaluate a whole range of flows up to the regional flood to determine if a stream's flood flow capacity (ability to carry a given flow of water at a fixed elevation) is reduced. Factors controlling a stream's flow capacity include channel roughness, stream slope and channel geometry (including flood plain overbank areas). The permit application should contain detailed plans, cross sections and perhaps hydrological and hydraulic analyses (when the conditions of NR 116.20(2)(a) or (b) apply). [See the Bridges and Culverts chapter of the handbook for the type of information that may be needed to evaluate a structure.] In any event, there must be an evaluation for compliance with Department flood plain regulations (a requirement for any permit). Make sure this information is provided when appropriate.

4) A permit may be granted "if the structure...is not detrimental to the public interest."

The Legislature has authorized the placement of structures in navigable waters for private use provided the statutory standards are met. Many factors, including the following, must be considered in order to determine if a structure installation is detrimental to the public interest:

a) Natural scenic beauty.
b) Potential for disruption of fish or wildlife habitat.
c) Impacts on wetlands or endangered resources.
d) Effects on water quality.
e) Adequacy of design, including potential for failure.
f) Lack of alternatives.
g) Compatibility with the trust doctrine.
h) Cumulative impacts.

It should be noted that this standard does not require a structure to be positively in the public interest. The question to resolve when considering a structure application is not "will any adverse effects result" but rather "will any adverse effects resulting from the structure be detrimental to the public interest." A balancing of public and private rights is required to make this determination.

Section 30.12(1) says structures or deposits in navigable waters are illegal unless a permit has been issued by the Department or they have been otherwise authorized by the legislature. This is similar to the language of the first statute authorizing permits in 1949, s. 30.02(1). At that time only deposits behind adopted shorelines (bulkhead lines) and lake bed grants were legal. There was no procedure for authorizing deposits in the statute that was to become s. 30.12. However, in 1957 the statute was modified to allow the issuance of permits for sand blankets

(a particular type of deposit).

Questions have arisen in the past whether we may issue s. 30.12 permits for deposits. The answer is only those "deposits" that are specifically enumerated.

In 1959 the statutes were reorganized to the current format and s. 30.12(2) was created. The caption for s. 30.12(2), PERMITS TO PLACE STRUCTURES OR DEPOSITS IN NAVIGABLE WATERS, was created with subparagraph 2a regulating structures and 2b regulating sand blankets. In 1981 subparagraph 3 was created for approval of "minor" permits, and sand blankets as well as other previously added "minor" activities were moved from (2) to (3). Although paragraph 2 no longer had any permit authority for "deposits", the caption was not changed and it remains today.

b. Minor Permits: Section 30.12(3), is used for authorizing relatively minor structures and deposits (sand blankets, fish cribs, spawning reefs, wing deflectors, riprap, fords, boat landings and permanent boat shelters) that normally have no significant impact on the environment or water use. The Department may deny the application if it finds the proposed structure or deposit:

1) "...will materially impair navigation."

Generally, the structures authorized under this section will not obstruct (physically block) navigation. However, they could impair navigation by reducing normal water depth. For example, fish cribs could be an unseen hazard to boaters if insufficient clearance is provided from the water surface to the top of the fish crib.

2) "...will...be detrimental to the public interest."

See narrative under s. 30.12(2).

2. ADMINISTRATIVE CODE STANDARDS.

a. NR 1.95 establishes general standards to be applied by the Department in decisions affecting wetlands. The Department shall presume that wetlands are not to be adversely impacted or destroyed and that the least overall adverse environmental impact shall result when evaluating proposals that require its approval. NR 1.95 is the predecessor to NR 103. NR 103 supersedes NR 1.95 in regulating decisions made by the Department.

b. NR 103 establishes water quality standards to be applied by the Department in decisions affecting wetlands. NR 103 further specifies the requirements to be used by the Department when determining the potential adverse effects of a project on a wetland versus the benefit to the applicant.

c. NR 115 and 117 establish standards to be followed by counties and cities and villages in their administration of shoreland and shoreland-wetland zoning ordinances. Permits should require applicants to conform with the standards established in NR 115 and 117.

d. NR 116 establishes standards to be followed by local units of government in their administration of floodplain zoning ordinances. Permits should require applicants to conform with standards established in NR 116.

e. NR 150 establishes procedures for determining whether a given project requires an Environmental Impact Statement (EIS). Structure permits may require an environmental assessment; check the type list contained in the rule.

f. NR 325 establishes procedures for maintenance, repair and removal of fixed houseboats and boathouses.

g. NR 326 establishes guidelines for construction of piers. See Chapter 80 or 85 of the handbook for additional standards and further discussion of this code.

3. LEGAL OPINIONS.

a. Fences in navigable waterways. Bureau of Legal Services opinions dated August 15, 1972, April 24, 1974 and August 23, 1974. Chapter 90 of the statutes requires adjoining landowners to maintain partition fences if either of them use their land for farming or grazing. It also provides that a fence running through waters shall be placed in equal cost shares. Since no specific authority to obstruct or place structures in navigable waters is granted, fences have not been legislatively exempted from Chapter 30 permit and approval requirements. Nevertheless, the Department has normally only taken action upon complaint. ***NOTE****: Recommending the use of smooth wire, no electricity, marking wire with flags, posting warning signs, providing a portage or using swinging gates are some ways to minimize adverse effects of fencing. Section 30.10 may be used to authorize them.*

b. Relationship between ss. 182.017 and 30.12. Bureau of Legal Services opinion dated April 23, 1973. Any corporation organized to furnish telegraph or telephone service or transmit heat, power or electric current to the public or for public purposes are legislatively authorized to place structures in navigable waters. Therefore, they are exempt from s. 30.12 permit requirements although the structures shall not "at any time obstruct or incommode the public use of any...body of water." However, permission in the form of leases or easements must be secured from private owners or the Commissioners of Public Lands as appropriate for placing structures on the bed of waterways. Section 30.20 does not contain a permit exemption similar to the one in s. 30.12, so permits would be required.

c. Temporary structures or fills. Bureau of Legal Services opinion dated September 4, 1973. Temporary structures require a permit. If they are to be used in conjunction with a permanent project that requires a permit they should be authorized in that permit. Temporary or permanent fills can only be placed provided they meet the statutory standards of and are authorized by ss. 30.11 and 24.39.

d. Placing fill or structures landward of a bulkhead line. Attorney General's opinion dated October 1, 1974. A riparian owner may place a structure or fill behind a bulkhead line without obtaining a permit pursuant to s. 30.12.

e. Depositing sand on ice for automobile races. Bureau of Legal Services opinion dated February 20, 1975. Sand placed for racing events does not violate ss. 29.29(3) or 30.12 until it melts through the ice and enters the water or reaches the bed of the waterway. To avoid statute violations sponsors should properly remove the sand after the race.

f. Placement of riprap. Bureau of Legal Services opinion dated December 19, 1978. A riprap permit is required prior to an intentional placement of riprap materials on the bed or

bed and bank of a navigable waterway. Placement of riprap materials on the bank of a navigable waterway would not require a permit. However, highly negligent placement where the riparian owner has reason to know or knows that riprap has or will imminently rest on the bed may be within the scope of the statute and require a permit. Local zoning ordinances may require permits for riprap.

g. Unauthorized structures. Bureau of Legal Services opinion dated February 15, 1980. The presumption of "conformity with the law" in s. 30.122, applies only to structures legal when built. It merely reiterates the obvious legal principle that if a structure was legally constructed pursuant to permit, statute or common law, it is presumed to be legal at the present date.

h. Water pollution control statute. Attorney General's opinion dated May 21, 1980. The Department is required to consider the effect on water pollution in order to issue a permit under s. 30.12(2)(a), (now s. 30.12(2)). On that basis, s. 30.12 may be properly characterized as a water pollution control statute. As such, the Forest Service, United States Department of Agriculture, who believe section 404(t) of the 1977 amendments to the Clean Water Act (Pub. L. No. 95-217) only requires it to submit to state licensing under a state water pollution control statute should apply for state permits. The USFS refused to get permits from the DNR at the time of the AG opinion.

i. Authority of the State of Wisconsin to regulate federal construction. Letter from Secretary Anthony Earl to United States Department of Agriculture dated June 5, 1980. "The Attorney General concludes, based upon Reuter v. Department of Natural Resources and the history of administrative practice of this agency, that the Department is required to consider the effect of water pollution in order to issue a permit under s. 30.12."

Section 31.06 is also a water pollution control statute. Federal agencies should submit permit applications for activities regulated under ss. 30.12 and 31.06.

In addition, ss. 313 and 404(t) of the Clean Water Act require federal facilities to comply with state substantive and procedural requirements. Thus, federal activities requiring a permit from the Corps of Engineers or EPA will require any appropriate state permits.

Federal agencies must also obtain permits for activities on the state-owned beds of natural, navigable lakes.

E. PROCESS

1. APPLICATION.

Permit applications must be submitted for major and minor structures. When an application is received it should be carefully reviewed to ensure that all required information has been submitted. An incomplete permit application should be returned to the applicant with instructions on needed information. Structures requiring technical review such as hydraulic analysis (stream structures) or structural analysis (coastal structures) generally require detailed information. All appropriate staff should review such an application to identify missing or inadequate information that will need to be supplied by the applicant.

2. FIELD INVESTIGATION.

The project and site are inspected to evaluate the environmental and physical effects of the proposal, to evaluate and verify other data supplied by the applicant such as soil type, floodplain cross-sectional data, fill requirements, etc. and to determine if the proposal meets statutory standards. (See discussion under design considerations) It may be desirable to complete the field investigation prior to issuing a public notice. Investigation prior to notice would allow the Department to determine its position before expiration of the notice period in the event the Department wishes to request a hearing.

3. NOTICE REQUIREMENTS.

For any application received pursuant to s. 30.12(2), the notice and hearing provisions of s. 30.02(3) and/or (4) must be followed. In some cases where it is recognized that a hearing will be required it may be desirable to issue a notice of proposal to solicit additional public opinions, particularly when the project is suspected to be highly controversial.

A public notice is not required for an application received pursuant to s. 30.12(3).

4. DESIGN CONSIDERATIONS AND DISCUSSION.

a. Breakwaters, Jetties or Groins - Almost exclusively limited to the Great Lakes.

Breakwaters are usually massive structures built high enough to prevent overtopping during specified storm frequency events. Their purpose is to provide calm water on the leeward side for marinas, harbors, etc. Jetties and groins, on the other hand, are primarily structures designed to protect shorelines from erosion. They achieve that objective primarily by causing the buildup of littoral drift material. The build-up of a beach reduces water depth which dissipates wave energy by causing waves to break further from the erosion prone shoreline. They do not have to be much higher than normal high water elevation to be effective. One of our principal concerns should be what might happen on the "downdrift" side of such structures. Littoral drift is caused by nature's attempt to balance energy. Breaking waves and currents carry a given amount of bed material along a beach. If the supply of bed material is reduced (as would happen in the case of groins and jetties), the waves and currents pick up new material to achieve equilibrium again. The pick-up of new material can result in increased erosion to downdrift riparian owners. This effect can occur for a distance of up to 15 times the length of the groin or jetty on the "downdrift" side. When evaluating such proposals, request information on expected impacts adjacent to the project site. It could be that granting such a proposal might be "detrimental to the public interest" because of potential secondary effects. [Section 30.12 does not contain a standard for consideration of effects on adjacent riparian owners as do other chapter 30 permits.]

An evaluation of the littoral environment is required to determine the appropriateness of one of these devices on lakes as either shore protection or aids to navigation. The kind and amount of littoral drift, wave energy causing erosion and drift, and type of foundation materials are all important factors to be considered in the field investigation.

Wave energy is influenced by wind speed and direction, fetch distance (the distance over which wind works on the water surface to generate waves), near shore bottom slopes and depths, and the configuration of the shore. Points tend to concentrate wave energy, bays tend to disperse wave energy.

Foundation conditions are important in the selection of a filter for riprap or loose rock structures. A fine meshed filter cloth should be used for clay or fine grained foundation material. A relatively coarse filter cloth could be used for sand or gravel foundation material. Varying gradations of gravel may be used in lieu of filter cloth since the object of either type of filter is to hold materials in place and withstand water action.

b. Solid Piers - Primarily for outlying waters and harbors, but allowed in Lake Winnebago, Mississippi River and portions of the Fox River.

To withstand the extreme forces on the Great Lakes, massive permanent piers may be required to provide boat mooring areas. This is particularly true at steep rocky shorelines with deep water next to the shore. These piers generally need to conform to the requirements of NR 326. NR 326 requires an opening in the "solid" pier to pass littoral drift materials. Although it is unlikely that littoral drift will be unaffected by having an opening in the pier, if sized correctly, interruptions can be minimized (at least during more or less normal conditions). The opening size needed depends on site characteristics, including water level fluctuations, but may be on the order of 20 to 40 feet. In order to accommodate the littoral drift opening, the pier may need to be longer than what would normally be required because there still has to be an area on the lee side of the pier to provide a safe mooring area for boats.

Sometimes solid piers are designed to be multiple purpose structures. If they are intended to act as a groin or jetty to protect the shoreline from erosion, the pier standards may not be totally applicable. For example, requiring an opening to pass littoral drift would negate the shore protection purpose of the structure. When evaluating such a proposal, you must determine whether there is a need for shore protection.

c. Sand Blankets

Sand or other similar materials are allowed on inland lakes and flowages as deposits for the purpose of improving recreational use. Sand blankets are not allowed on rivers and streams by statute and should not be permitted on the Great Lakes. The following are guidelines for issuance of these permits:

1) The size of the allowed blanket should be appropriate to the project site and purpose. For a single family residence, a 50' x 50' blanket is usually sufficient; unusual circumstances may dictate a smaller or larger allowable area. Public uses (beaches, clubs) may require a significantly larger area.
2) The material used should be designed to stay in place. This usually means that pea gravel, not sand, should be used because the larger particle size is less likely to drift off site in response to wave energy. Another advantage of pea gravel is that it will more likely enhance fish and invertebrate habitat.
3) Generally, the Department has restricted sand blankets to water less than four feet deep, since that depth is considered the normal lakeward extend for wading.
4) Six inches is recommended as the maximum allowable thickness of the blanket. A request for greater thickness probably indicates that the site is unsuitable.
5) Placement of sand blanket material on ice should not be allowed on those lakes where the ice tends to move.
6) Placement of sand blanket material over muck should be carefully evaluated because of possible displacement and/or hazard to wading swimmers and anglers who might

walk off the sand blanket and sink into and be held by the muck.

7) Plastic sheeting should not be allowed because it tends to float due to the formation of gases underneath and because use of sheeting is generally related to the need for firming up unstable lake bottoms (muck, etc.).
8) For purposes of beach retention, sand blankets should not be granted where beach slopes are steeper than 1 vertical to 8 horizontal. Steeper beach slopes are generally not stable. The sand blanket material would most often soon move off a steeper slope.
9) Sand blankets should be denied where lake beds suitable for wading and swimming already exists.
10) Sand blankets over rocky or gravelly bottom may influence spawning areas either positively or negatively.
11) Repeat sand blanket requests should be discouraged since this probably means the material is not staying in place.
12) Sand blankets cannot be used to create upland.
13) In general, sand blankets should not be allowed to create a shallower wading area in an area of natural steep bottom slope.
14) Sand blankets should not be placed in areas with fast current (over 1-2 ft/sec.) such as adjacent to inflowing streams.
15) Sand blankets should not be put in an area of active shore erosion.

d. Fish Cribs and Spawning Reefs

Fish cribs, spawning reefs, and similar devices should be authorized only in lakes and flowages under s. 30.12(3)(a). Only cribs and spawning reefs constructed of natural materials such as wood and stone should be permitted.

Cribs should be placed in at least 10 feet of water and have at least 6 feet of water over the top of them. Base the depths and clearance on established summer water level or "normal" low water.

Spawning reefs should be completely submerged at established summer water levels or during normal low water. Because spawning reefs are often located in shallow water, they should be marked with appropriate waterway markers that conform to design and approval criteria contained in NR 5.09.

Tree drops (cutting trees and allowing them to simply fall into the water) should be authorized pursuant to s. 30.12(3). They should be permitted only if deemed biologically necessary to protect or enhance a fish population, and if they are anchored or cabled to the shore.

e. Stream Habitat Improvement Devices

Most stream habitat improvement projects are constructed by the Department or by conservation organizations in cooperation with the Department. Projects constructed by the Department should be authorized using the procedures in Manual Code 3565.1. Projects that are not sponsored by the Department should be treated as minor structures and processed under s. 30.12(3)(a). Types of structures that may provide habitat improvement include half logs, boulder retards, bank cover (lunker structures), wing dams, "V" deflectors, digger logs and brush bundles.

It is very important that the fisheries manager review and concur with all stream habitat improvement devices. Improper design or placement of the devices will be unsuccessful and normally will cause environmental damage (erosion, sedimentation, etc.). If the intent is to narrow the stream, the structure should be evaluated for effect on flood flow capacity.

f. Nesting Platforms

Loon and tern nesting platforms anchored or fastened to the bed of a navigable waterway require approval pursuant to s. 30.12(2). Successful use by the intended species is quite variable around the state. For this reason, concurrence should be obtained from the local wildlife manager before approving requests for nesting platforms. Typical conditions for permits for nesting platforms include:

1) After placement, the nesting platform should be checked weekly. A record of use should be kept and made available on request.
2) Platforms should be removed from the waterway by August 31 of each year. They will not be used after that date. They must be removed and dried to prevent them from becoming waterlogged.
3) The platform should be placed in the water within a week of ice out (to improve chance of successful use by loons).
4) If not used by the intended species for two consecutive seasons, the platform should be removed and not replaced.

Other types of nesting platforms (osprey, cormorant, wood duck, etc.) are also placed in navigable waters. These should be permitted only with the concurrence of the local wildlife manager and in a manner that will not result in obstruction to navigation.

g. Waterfowl Habitat

1) Section 30.124 allows the Department to undertake waterfowl habitat activities that would normally be prohibited by statute. The Department must make specific findings that the project:

   a) will not adversely affect public or private rights or interests in fish and wildlife populations;
   b) will not adversely affect navigation;
   c) will not adversely affect flood-flow capacity of any waterway; and
   d) will not result in environmental pollution as defined in s. 144.01(3).

2) Activities which can be authorized by M.C. 3565.1 are:

   a) Cutting aquatic vegetation without removing the vegetation from the water for the purpose of improving waterfowl nesting, brood, and migration habitat.
   b) Developing nesting islands for the purpose of increasing waterfowl production.

3) Specific criteria for these projects include:

   a) All projects must be on public lands or waters. If the Department is not the owner of the land or not the riparian owner, an easement, lease, license, or other written permission from the owner or riparian is required.
   b) All projects must be designed, supervised, and controlled by the Department.
   c) For nesting islands being constructed in a wetland located in a shoreland/wetland zone and above the ordinary high-water mark of a navigable water body, an amendment to the local wetland zoning ordinance will be required. (No such amendment is necessary if the project is below the ordinary high-water mark although a local zoning permit may be

required).

d) Compliance with provisions of NR 347 is required if the islands are to be constructed with dredge material.

e) Erosion control measures must be employed during construction to reduce the potential for erosion. An erosion control plan should be prepared prior to construction.

4) General design criteria for waterfowl nesting islands include:

a)	Size:	Minimum - 0.1 acre (50' x 100' or 80' dia.) Preferred - 1 to 2 acres
b)	Distance from shore:	Minimum - 100' Recommended - 300'
c)	Depth of water:	Minimum of 2' for 30' around island
d)	Island height above water:	2' above maximum authorized level
e)	Side slopes:	Minimum 4 H: IV Recommended: 5H: IV
f)	Top Dressing:	Recommended: 6" of suitable topsoil material
g)	Cover:	Cool season grasses or low brush

5) General design criteria for "cookie cutter" applications include:

a)	Brood water:	Minimum size - 2 acres of irregular shape
b)	Pair ponds:	Serpentine paths through vegetation mats
c)	Pathways:	Serpentine pathways connecting the brood water.

h. Aeration Systems

Those portions of aeration systems that are not attached to legal structures and are placed, anchored, or resting on the bed of navigable waterways are structures and must be authorized pursuant to s. 30.12(2).

Aeration systems should be evaluated for their adverse affects on any incidents to navigation such as snowmobiling, ice boating, ice fishing, and skating. All permits should have conditions requiring that ice holes or areas of open water or thin ice be marked with appropriate warning signs or other warning measures. Section 167.26 contains specific standards for marking ice holes and open water caused by aerators.

i. Fiberglass Screens for Aquatic Nuisance Control

While fiberglass screens used to control aquatic plant growth are not physically similar to sand blankets, they provide a similar function - to improve recreational use adjacent to an owner's riparian property. Accordingly, where screen placement meets the criteria of s. 30.12(3)(a)1. expedited permit processing is appropriate (no public notice required). Proposals that do not meet these criteria should be denied or, if appropriate, the notice and hearing procedures of s. 30.12(2) should be employed.

The following questions should be considered when deciding to grant or deny approval of a screen:

1) Will swimming, wading, fish habitat, boat access, etc., improve?
2) Is the project within the riparian owner's zone of influence?
3) Will wave action or currents dislodge the structure or cause it to be covered by sediment?
4) Will the screen materially impair navigation or be exposed by variable water levels?
5) Will the screen be placed over organic substrates that are likely to produce gas ballooning of the screen?
6) Is the anchoring system adequate (i.e. one brick every 3' along the sides and in center of screen)?
7) Will the screen be removed seasonally (after September 30 of each year)?
8) Will placement affect fish spawning or invertebrate production areas?
9) Will placement be in an area heavily used by anglers where snagging of fabric by lures is likely?
10) If for boat access, has the most direct route been selected?
11) Has the material been designed specifically for this purpose?

Permits for screens not removed and cleaned annually should be revoked and/or appropriate enforcement action should be initiated.

j. Shore Protection

Section 30.12(3)(a)3 allows riprap or similar material on the bed and bank to protect the bank and adjacent land from erosion. Administratively, the Department has interpreted "similar material" to include something which is functionally similar to riprap. Examples of "similar material" include wood and concrete retaining walls, steel sheet piling, C-LOC (plastic) sheet piling, and interlocking concrete blocks.

Certain materials are not suitable for shore protection because they are likely to fail in a relatively short time, can potentially create hazardous conditions, are not aesthetically compatible for shoreline use, or constitute a regulated solid waste. Examples of these types of materials include:

* foundry pots
* bricks
* plaster
* wood chunks
* asphalt
* bituminous products
* used automobiles
* scrap metal
* tires
* unprotected sand, clay, or other soil

* concrete demolition material having protruding reinforcing rods
* or any material that could produce toxic or hazardous leachate

Permit applications for shore protection measures designed primarily for landscaping or "aesthetic" purposes should be denied. An example might be a retaining wall along the shore where the real purpose is to fill and level a gradually sloping lot to make it "more useable."

1) Riprap

The Department should encourage the use of rock riprap for shore protection in lieu of other materials or vertical walls. Riprap is generally easier and/or less costly to maintain, more aesthetically compatible, and less destructive to fish and wildlife habitat than other methods of shore protection. Rock riprap often provides or enhances habitat for fish and aquatic macroinvertebrates.

On inland lakes, fieldstone or quarried stone up to 250-pound size is suitable as riprap. On the Great Lakes, much larger stone should be used (500-2000 pounds or more). Use of a geotextile or graded gravel filter layers under the riprap is encouraged to reduce maintenance and provide stability. The riprap layering, from coarse (rock) to fine (gravel), absorbs wave energy and prevents soil particles that would ordinarily be washed away from escaping.

There is no specific limit to the allowable amount of intrusion into the water to stabilize a shoreline. However, riprap should extend no further into the water than necessary to provide a stable structure.

At one time the Department required removal of bank material to compensate for the installation of riprap. Due to difficulties enforcing this policy, complaints and questionable legality, the above policy was adopted.

Applications for riprap projects can be submitted using either the standard or short form application. Use of the short form application/approval (Form 3500-91), which can be issued immediately at many DNR offices, requires that the project comply with all of the conditions printed on the form.

Riprap projects can also be reviewed and approved using the General Permit process described in NR 322. To qualify for a general permit, the proposed project must comply with each condition printed on Form 3500-86 and contained in NR 322.

2) Retaining Walls

A retaining wall is any structure placed below the ordinary high-water mark which creates a distinct vertical separation between open water and upland.

Retaining walls designed for use as shore protection can be authorized using s. 30.12(3)(a)3. Retaining walls used primarily for docking or boat moorings cannot be considered "shore protection" and must be reviewed and authorized under s. 30.12(2).

Retaining walls have traditionally been authorized, although reluctantly in some cases. Recently, a detailed analysis has been completed that indicates significant long-term cumulative adverse impacts are associated with these structures. Problems noted include:

a) They often fail in a relatively short time compared to their expected structural life (particularly those installed by individuals for protection of their shoreline). Failure can result from one or more of the following factors:

i. Exposure to the drastic change in seasonal temperatures.
ii. Physical forces associated with ground freezing and thawing.
iii. Hydrostatic pressure.
iv. Improper design and/or installation of generally inflexible materials.
v. Improper choice of construction material.
vi. Undermining of structural footings because of currents, wave action, or seepage.
vii. Ice damage.
viii. Failure to use tie backs or deadmen.

Frequent failure can result in deposition of fill and debris into navigable waters, increased costs to the owner for removal of a failed structure and costs to replace the structure.

b) Other possible adverse impacts of retaining walls that should be considered to determine if a project will or will not be detrimental to public rights and interests include:

i. Cumulative adverse effect upon the aesthetics of natural shorelines. The distinct visual separation caused by retaining walls is generally considered a degradation of the natural shoreline.
ii. Cumulative effects upon flora and fauna within the shallow water/shore interface area which may cause a significant disruption to the food chain and aquatic ecosystem. The near shore area is often necessary habitat for fish spawning and juvenile fish habitat. This habitat is often destroyed when a retaining wall is constructed.
iii. Retaining walls are effective barriers to the survival of fauna that depend upon the cohabitation of an aquatic/terrestrial environment (amphibians for example).
iv. Disruption of water movement to and from contiguous wetland complexes. This could result in alteration of species composition of the wetlands and could render it unusable for certain aquatic fauna that depend on the wetland during any given life stage.
v. Exacerbation of erosion problems on adjacent reaches of shorelines.

c) Based on known problems related to retaining walls concerning long-term adverse effects, the following criteria should be considered in the permitting process prior to issuance or denial of a permit:

i. For retaining walls issued under 30.12(3), the purpose of the project must be to protect the bank and adjacent area from erosion.
ii. The Department must find, after inspection and analysis of the anticipated project impacts, that the retaining wall will not be detrimental to public rights and interests or interfere with the rights of other riparians.
iii. The Department must find that the applicant has submitted design specifications and construction details that clearly demonstrate the wall would be structurally sound.

d) These are some situations where, while adverse impacts are expected to occur, extenuating circumstances may not warrant an extensive evaluation or permit denial.

Situations that commonly fall into this category include:

i. Retaining walls constructed in connected enlargements where walls presently exist. These are artificial bodies of water where design and adjacent construction have generally destroyed natural environmental values associated with the area.
ii. Locations where ice and wave damage potential is small
iii. Locations where aesthetic values are low
iv. Locations where vertical docking facilities are needed (municipal or industrial harbor areas, marinas) [permit under s. 30.12(2)]
v. Locations where environmental values are limited
vi. Steep severely eroded shorelines where additional deposition of material is likely to occur because of slope failure.

k. Buildings (Except Boathouses) on Lakebeds

With increasing frequency, we are asked to approve structural repairs to buildings other than boathouses located below the ordinary high-water mark of a navigable waterway.

If a permit had been issued for the building, the structure can usually be maintained as long as any maintenance complies with terms or conditions of the original permit. The use of the building must not change substantially from its original authorized use. If other public interest factors have changed, the Department may "reopen" the permit.

For any building without a permit after the enactment of Chapter 335, Laws of 1949 (June 28, 1949), requests for maintenance permits should be denied and action should be initiated to seek ultimate removal of the building.

Structures placed between 1933 and 1949 are not legal. Such structures were prohibited and there were no provisions for permits until the 1949 law. Prior to 1933, there was no specific prohibition to placement of structures and buildings on lake or streambed as long as navigation was not obstructed. See the history section of this chapter for a detailed discussion of structures and buildings placed in waterways.

While our goal is ultimate removal of unauthorized buildings, we are often faced with an issue of equity. The equity issue can be dealt with by employing nonconforming use concepts such as those in the "boathouse law" contained in s. 30.121.(3). This law allows for maintenance and repairs of the structures "if the cost of repair or maintenance does not exceed 50% of the equalized assessed value of the boathouse."

If, because of equity or other extenuating circumstances, it is decided not to pursue immediate removal of a structure, the following procedure should be used and attested to by a mutually-signed stipulation or agreement:

1) Determine the current equalized value of the structure. If an independent assessment of the building is not available, obtain an appraisal of the building that describes "current fair market value." Each time repairs are needed a new value should be submitted so accurate proportion of repairs made can be determined.
2) Require the applicant to maintain records of all maintenance and repair records - to be made available to the Department on an annual or demand basis.
3) Once repair and maintenance costs equal 50% of the value(s) determined in step 1, the structure should be removed from the bed of the waterway.

4) The stipulation or agreement shall be recorded with the Register of Deeds in the county in which the structure is located.
5) Any violation of an agreement or stipulation should be treated as a violation of the law and enforced in accordance with the provisions of Chapters 30 and 227.

l. Waterfowl Blinds

Waterfowl blinds on state-owned property, including the beds of natural lakes and state-owned flowages, are treated differently from those on privately owned beds of waterways.

"Blind" is defined as a permanent structure used in hunting waterfowl which is not removed at the end of hunting hours each day.

"Waterfowl" means wild geese, brant, wild ducks, rails, coots, gallinules, jacksnipe, woodcock, plovers, sandpipers and wild swan.

1) State-owned land

Blinds on state owned lands are regulated under s. 29.27. The requirements imposed under this law are:

a) The blind must bear the name of the owner affixed permanently to the blind in lettering one-inch square or larger.
b) It may be erected not more than 7 days prior to the opening of the waterfowl hunting season.
c) It must be removed within seven days after the close of the waterfowl season.

Blinds that don't meet the requirements of s. 29.27 that are constructed on state property by property managers are allowable under Manual Code 3565.1 procedures. Since they are built by the state, they need not be removed if adequate justification to keep them in place is proven. Situations in which permanent blinds could be allowed are for the handicapped and for viewing wildlife that may be present for more than the waterfowl hunting season.

2) Privately owned land

Blinds would technically be considered structures within the meaning of s. 30.12. However, due to tradition and the practical problem of seeking enforcement for thousands of duck blinds on the beds of navigable waters, the Department's policy has been to investigate and seek enforcement, if appropriate, in response to a written complaint from the public. We do not actively investigate duck blinds, unless the blind is a serious hazard to navigation or it is causing environmental damage. Aesthetics should be considered in any questionable duck blind since the skeletons of abandoned or unused blinds seem to be the most common concern with blinds. (A.C. Damon Memo 3/15/77). Any enforcement action would come under either ss. 30.12 or 30.15.

We have consistently taken the position that duck blinds are not to be considered for issuance of permits using the same logic as we use for boathouses: the structures are an unnecessary private use of a waterway and they are not absolutely necessary for gaining access to navigable water nor are they necessary for a riparian to pursue his or her private rights in the navigable water. This policy has resulted in the practice of not prohibiting reasonably sized blinds but allowing blinds that are the minimum necessary to pursue the activity. Examples of things that

should not be allowed are two-story structures and structures with storage facilities. Blinds placed on privately owned beds of waterways are of course controlled by the owner of the property and may be treated as any other trespass action.

m. Water Ski Jumps

Seasonally installed ski jumps have been interpreted to be structures that are regulated under s. 30.12 by the state Court of Appeals in 1982. Most ski jumpers contend that a jump must be properly positioned and firmly anchored in order to be safe. The time and effort required to do this usually does not allow the jumps to be installed only when they are to be used.

In addition to the flood flow capacity and public interest requirements found in s. 30.12, there some specific factors to consider in the review of water ski jumps:

1) Is the structure within the applicant's "riparian zone"?
2) Will the use (not the structure itself) create safety problems or user conflicts?
3) Is the color, shape and lighting of the structure adequate so that it is not a hazard to navigation?

These are some of the conditions that are normally included in a permit for a water ski jump:

1) The structure must be lighted from sunset to sunrise by a white light visible all around the horizon. The light must be of such character as to be visible at a distance of at least 2 miles on a dark night with clear atmosphere.
2) The structure and its associated use area must be marked with uniform marking buoys using rectangular information symbols. The permit holder is responsible for maintenance of the structure and the marking buoys. The buoys must be authorized by a municipal ordinance adopted pursuant to s. 30.77.
3) This permit is subject to the provisions of ss. 30.66 and 30.69 which forbid water skiing within 100 feet of an anchored occupied boat, marked swimming area, public boat landing, dock, raft, pier or buoyed restricted area.
4) The State of Wisconsin, by issuing this permit, assumes no liability for any damages resulting from placement or use of the structure.

We have taken the position that the use of any permitted ski jump may be restricted by the owner as allowed in s. 30.12.

n. Fords

1) All material excavated for placement of the material and sloping the streambanks must be leveled on adjoining upland.
2) You are required to remove an amount of material equal to the material to be placed on the stream bed.
3) The finished elevation of the stream bed must match the natural stream bed at both the upstream and the downstream end of the crossing.

o. Boat Ramps

There are three basic types of boat ramps commonly used in Wisconsin--poured in place concrete, pre-cast concrete slabs and gravel. Cost, anticipated use and the amount wave or current and ice action determine which materials are used. A slope of 13-15% is typical for ramps on inland lakes.

1) Poured in place concrete

   a) Used where there is high wave and ice energy or heavy use.
   b) Usually requires dewatering the site.

2) Pre-cast concrete slabs

   a) Susceptible to ice action.
   b) Easy to install without heavy equipment.
   c) Requires a 6" layer of 4" stone as bedding.

3) Gravel

   a) Easily damaged by ice, wave and currents.
   b) Disturbs least amount of area.

Factors to consider:

* Will the ramp and associated parking area contribute to overuse of the waterbody?
* Will a navigation hazard be created by adding boats to the area of the ramp?
* Will neighbors be affected by increased use of the area?
* Is the boat ramp consistent with adjoining uses such as swimming areas, natural areas, etc.?

F. FINAL DISPOSITION

All structures are approved by permit one way or another. See manual code 3506.1 for procedure. We have long form permits, short form permits and general permits, each with a somewhat different process and final authorization.

Where a public notice is required, it is the Department's policy to grant hearings to applicants if it objects to their projects. Section 30.02(3) directs the Department to schedule a hearing when we receive a substantive written objection and hearing request as a result of the public notice.

See chapter 10 of the handbook for appropriate appeal language to be included in any permit.

G. MONITORING

Permits should require the applicant to notify the Department five days before starting work and within five days of completion of the work. There should be a follow-up inspection to determine whether the work was done in accordance with permit conditions. Enforcement action should be considered if the work deviates significantly from the plans. Voluntary compliance may be sought in lieu of enforcement actions where permit violations are minor and particularly where statutory standards have not been compromised.

H. EMERGENCY PROCEDURES

Although perhaps not an emergency as such, the sudden loss of land or avulsion sometime occurs. The Department's position is that land that is lost due to a sudden occurrence, i.e., flood or storm damage, may be

replaced without formal authority if the work takes place within one year of the loss.

Authorized structures that sustain damage may be repaired without further authority unless the repair will involve enlarging the structure. Repairs to unauthorized structures should only be allowed if the owner secures a permit to maintain the structure.

I. ENFORCEMENT

A person violating s. 30.12 or any condition of a permit issued under that section is subject to a fine of not more than $1000 and/or imprisonment of up to six months if enforcement is undertaken pursuant to s. 30.12(5). Abatement pursuant to s. 23.79(3) should be requested when appropriate.

Because violation of s. 30.12 is a criminal offense, the legal burden of proof is quite high. An alternative civil proceeding is available and often more desirable to pursue. Forfeitures of not less than $10 nor more than $500 per day and/or abatement can be secured if enforcement is undertaken in accordance with ss. 30.15(1)(a) or (d) and 30.294. Since s. 30.15(3) declares each day a violation of (1) occurs a separate offense, the monetary penalty and subsequent deterrent value could be considerably higher under this section rather than s. 30.12.

Enforcement actions should be initiated with the appropriate circuit court. There will be occasional situations where the courts will not require what we feel is necessary to protect the environment or comply with the statutes. If this should occur, we only have two choices - appeal the decision or accept the court's action as sufficient disposition of the case. Additional enforcement proceedings under s. 30.03 are not an option once local enforcement actions have been completed.

In cases where we have reason to believe that local enforcement will not produce a satisfactory result, we should pursue full compliance through proceedings under s. 30.03.

J. EDUCATIONAL MATERIALS

Department pamphlets: "Saving Your Shoreline", "Wisconsin's Water Regulation Programs Work for You", "Public or Private? - Navigability", "Public or Private? - The Ordinary High-Water Mark", "Saving Your Shoreline"

CORRESPONDENCE/ MEMORANDUM **STATE OF WISCONSIN**

DATE: May 12, 1994 FILE REF:

TO: District Directors

Chapter 70, Water Regulation Handbook

FROM: John Fryatt - AD/5
Susan Sylvester - AD/5
Jim Addis - AD

SUBJECT: Regulation of automatic mechanical weed control devices

Recently, a mechanical weed control product was introduced into the market place under the trade name of "WeedRoller." Last year there were several interested vendors for this product seeking pre-authorization in the state of Wisconsin. During our review of this product it has become clear that several programs and Divisions need to be involved with the analysis of future proposals. The Lake Management Program is responsible for issuing permits for aquatic plant management and designating sensitive areas for aquatic plant protection, while the Water Regulation Program reviews applications to place structures on the beds of streams and lakes. Also, Fisheries Management routinely participates in the analysis of Chapter 30 projects and permits issued under the aquatic plant management program. Although this memo is primarily aimed at analysis of mechanical weed control, much of the guidance is also applicable to chemical weed control analyses. Accordingly, the three involved Division Administrators have reviewed and are signing this memo.

What is a WeedRoller?
The WeedRoller is a structure which effectively eliminates plant growth on the beds of lakes and streams at the site of installation. The product consists of up to three ten foot long, 6 inch diameter hollow aluminum tubes connected together to form a maximum length of 30 feet. The aluminum tubes then turn around a center pivot (generally the end of a pier) in a rolling motion at a rate of 4 revolutions per minute. The rotation of the tubes and the action of the cleats attached to the rollers disturb the bed in an effort to inhibit the growth of any rooted aquatics. The desired end result of this type of installation is the removal of all vegetation on the bed in a circular pattern up to 270 degrees and covering a maximum of 2100 square feet in area. The company has successfully tested systems which cover more area (as long as 60 foot radius) but currently does not recommend or warrant systems longer than 30 feet. Clays, silts and fines are suspended and eventually washed clear of the area.

How will we regulate WeedRollers?
Since the structure rests directly on the bed, placement of the device requires a permit under s. 30.12 Wis. Stats. While the WeedRoller, used to control aquatic plant growth, is not physically similar to sand blankets, it provides a similar function - to improve recreational use adjacent to an owner's riparian property. Accordingly, the criteria and procedures of s. 30.12(3)(a)l and (b) Wis. Stats., are appropriate (no public notice required). Proposals that do not meet these criteria should be denied.

Upon receiving an application Water Regulation Staff will forward the application to Water Resources staff who will review the project from an aquatic plant control perspective. Water Resources staff will

coordinate with Fisheries and Wildlife Management staff and make a recommendation to grant or deny the permit. This coordination and evaluation should be conducted similar to that in the existing chemical weed control program. Recommendations to deny the permit must have written justification and a commitment to support the recommendation at a public hearing if a hearing is necessary. Water Regulation staff will then address programmatic concerns and coordinate with other programs as necessary.

What considerations should be addressed in the review process?
The decision to grant or deny a chapter 30 permit is based on the impact the project will have on the public interest, which includes assessments of impacts to navigation, recreation, fisheries, wildlife, aesthetics and water quality.

Navigation and incidents of navigation:
This product has the potential to interfere with navigation. Use of the product should be restricted to sites with appropriate depths. If the site is in an area of potential navigation, depths should be at least 3.5 feet measured at the expected minimum water levels, to allow boats to safely pass over the roller. The device should not be allowed in areas where unwary swimmers might be present. The company's literature states, "Never allow people in the water while WeedRoller is working or plugged in." In some cases it may be appropriate to require conspicuous warning signs posting hours of operations and advising of potential hazards during operation.

Fishery and wildlife:
Macrophyte communities play two important roles in structuring littoral zone fish communities: 1) They provide increased production of invertebrates as food for littoral zone fish, and 2); They provide littoral zone fishes with diverse habitats that serve as refuges from predation and result in uniquely structured fish assemblages.

Impacts on Fish Community Structure
Fish species richness in aquatic ecosystems is related to habitat heterogeneity. Vegetation, one of the most important types of habitat, is significantly related to the overall species richness among lakes; lakes with more diverse aquatic vegetation have greater species richness. The cumulative impacts of any device that eliminates submergent macrophytes will ultimately create more homogenous habitat and has the potential to reduce species richness. Variation in plant growth forms (thick leafless stems --- thin stems with broad abundant leaves) within a lake indirectly influence fish community structure in littoral habitats. Also, lake size and form influence macrophyte distribution: larger windswept lakes have fewer, yet valuable macrophyte beds. Some fish species associated with specific macrophyte beds are simply very valuable (due to their scarcity). Site-specific or cumulative potential impacts of macrophyte removal on fish community structure may be grounds to deny a permit.

Impacts on Fish Production
The littoral zone is the most productive portion of a lake. Macrophytes augment production of invertebrates in aquatic ecosystems. Macroinvertebrate abundances are limited by the availability of suitable substrate for colonization. Macrophytes provide extensive increases in substrate for invertebrates relative to an unvegetated lake bottom. Macroinvertebrates living on the surface of macrophytes (epiphytic) are an important food resource for many fish species associated with the littoral zone. The habitat macrophytes create ultimately contributes to fish growth and production. Often predators like largemouth bass confine fry and juvenile fish (small bluegill <60 mm are vulnerable to predation) to vegetated habitats. If vegetated habitats are significantly reduced, small fish are exposed to increased predation, or survivors can occupy the remaining macrophyte beds at higher densities, depleting their food resources and resulting in slower growth rates. Bluegill growth appears to be greatest at intermediate densities of macrophytes. Extensive and dense macrophyte communities can limit predation on small bluegills, which often results in excessive survival, reduced growth and smaller, less desirable size structure. Growth rates and size structure of common littoral zone fish species can be used to identify

whether macrophyte communities, in a general sense, are limiting or abundant. For example, extremely dense, slow growing (not small size-structure) bluegill populations typify lakes with dense macrophyte cover over much of their surface area. Conversely, less abundant, fast-growing bluegill populations can result from limited macrophyte cover.

In lakes that are dominated (extensive monotypic beds covering much of the lake's surface area) by an exotic (i.e. Eurasian water milfoil), permits may be appropriate. However, permit review should carefully examine the near shore macrophyte beds for remnant native plants found on the shallow near shore shelf, as Eurasian water milfoil invasion generally follows a pattern of rapid expansion, dominance, and then a several year period of decline. At times, non-removal of milfoil may be an appropriate management alternative, and protecting remnant natives may be beneficial.

Impacts on Fish Spawning and Nursery Habitat
By its mechanical nature, the Weed Roller eliminates any fish spawning in the immediate area, and may impact adjoining habitats due to sediment suspension, transport, and settling. Limiting operation of the device to miss spawning periods would eliminate use during most of the spring and summer because many littoral zone fishes spawn well into the summer. Also, enforcement of such seasonal provisions as a permit condition may not be practical.
Conservatively, it should be assumed that all fish spawning in the impacted area will be eliminated.

Permit reviews should also evaluate the importance of the macrophyte beds as nursery habitat for littoral zone fishes; as the action of the Weed Roller will remove all nursery habitat at the site and displace any use of small fish within the area.

Impacts on Macrophyte Community
Some plant communities are simply very valuable either due to their scarcity in the local ecosystem or due to their overall scarcity throughout the state. Presence of these types of communities may be grounds to deny a permit. Every analysis needs to consider the cumulative impacts of similar removals throughout the waterbody. Generally speaking, healthy lakes have diverse natural plant communities which help support a diverse fishery. Removal of patches of vegetation will have the effect of diminishing the overall diversity of healthy communities and expose the community to colonization of aggressive exotics such as Eurasian water milfoil. Spot plant control may not appear to be negative on a site by site basis but generally, when considered on a cumulative basis, will have negative affects on healthy plant communities. Permit review should also examine impacts on emergent macrophytes as this device can operate in shallow water or on land.

Permit review needs to consider that impacts of the Weed Roller may be quite different from those of traditional weed harvesting and chemical herbicides. After Weed Rollers are removed, the sites are not expected to recover as quickly or to a similar species composition. Important organics, detritus, and fine sediment will likely have been suspended and transported from the site and rhizomes/roots will likely be destroyed.

Permit review should consider that the device will not operate in perpetuity. During some years, the owners may not visit their cottage. Other years the owner may loan the device out to other interested neighbors. Some years there will be mechanical breakdown and eventually the owner will move on. When that happens the open site is prime for colonization, which may be by an unwanted exotic species.

Macroinvertebrate Impact:
Macroinvertebrates will be affected. The degree of impact will be a function of the type of bed material involved and the associated water quality. Also, vegetative communities themselves may be a significant habitat area for macroinvertebrates. The action of the Weed Roller will severely reduce epiphytic and benthic (bottom dwelling) invertebrate production at the site. Epiphytic invertebrates will be nearly absent because of the loss of macrophyte substrate. After operation, new characteristics of the bottom substrate (loss of fine sediment, organic

detritus) will be unfavorable for most species of benthic invertebrates. Cumulative impacts of macrophyte removal on littoral zone invertebrate and fish production may be grounds to deny a permit.

Aesthetics:
Obviously, the Weed Roller will eradicate any emergent vegetation in the area. Elimination of this natural scenic beauty needs to be considered in the permit analysis and may be a valid reason for denial of a permit.

Water Quality:
Since this device is likely to temporarily resuspend bed material, it is important that it be restricted to appropriate bed material. The rollers and cleats tend to repeatedly suspend fines until they are washed clear of the area, eventually resulting in a consolidated firm bottom. Until the device reaches a stable setting, it is likely that water quality near the device will be negatively affected. The reviewer needs to consider the particle size of the bed material and the impact of continual resuspension of fines on the water column. Some lakes have been treated with chemicals that may be tied up in the existing sediment. If staff believe that the bed material at the site may be contaminated, sampling may be in order.

Compliance with Section 30.125 Wis. Stats.:
Section 30.125 requires weeds to be removed after they're cut. The intent of this product is to remove plant material by agitating the bed and then letting the weeds float to the surface and shore. Because this product is designed to be operated remotely, it is likely that much of the vegetation could end up on the shore (either the applicant's or someone elsels) and could lie there uncollected. Therefore, any permit granted should require plant removal before initial and subsequent seasonal installations.

Transportation of exotics:
Some exotic species may actually be transported by moving these types of mechanical devices from lake to lake. Permits authorizing the installation of these devices should contain a condition that restricts the device to the lake and site it was authorized for, unless specifically authorized by the Department through a permit amendment.

Drafted by:

Ken Johnson - WZ/6 and
Paul Cunningham - F14/4

Reviewed and approved by:
Robert Roden - WZ/6
Bruce Baker - WR/2
Lee Kernen - FM/4

cc: All Water Regulation & Zoning Staff
District Water Resources Supervisors
District Fish Managers
Area Fish Managers